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The National Geographic Society
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Bulletin No. 1, February 2, 1953

Panama Canal Treaty Signed 50 Years Ago

THIS is a gold-letter year for that monumental triumph of engineering—"The Big Ditch." Just a half century ago the United States and the Republic of Panama signed a treaty which brought into existence the Panama Canal—widely regarded as the greatest canal man has ever built.

Since its completion, the waterway has proved of incalculable value to peaceful commerce, and provided the nation with a vital asset in wartime. Last year almost 8,000 vessels, representing 34 nations, passed through it. For use of this short cut between Pacific and Caribbean—vestibule to the Atlantic—they paid $27,000,000 in tolls.

Where West Is East and East Is West

The Canal Zone acquired by the United States under the 1903 treaty is a 10-mile-wide strip of land extending southwestward through the isthmus which links North and South America. Because of this slant, the Pacific, or western, end of the canal actually lies to the east of its entrance on Panama's Atlantic coast. The waterway is 42 miles long.

In area, the Canal Zone covers 553 square miles, 191 being inland water. Despite its narrow width, the strip of territory has a population of 52,300, or more than 100 persons per square mile. This is more than twice the average for the continental United States. Residents of the republic (illustration, cover) number approximately 802,000.

Most of the people depend for a living on working for the Canal or in related pursuits. Because safeguarding the water route through the isthmus is of major importance, the governor of the Zone traditionally has been an officer of the United States Army. He is responsible for the operation and maintenance of the Canal and for the civil government, as well as for military protection.

Jet planes now patrol the land which set early explorers dreaming of a man-made short cut to the Pacific. Balboa, discoverer of that ocean, had the idea in the 1500's. Cortés suggested such a project.

Builder of Suez Failed at Panama

As the New World became better known, mariners realized that a canal would save them the almost 8,000 miles required for a voyage around South America. In spite of talk and planning from time to time, the dream remained a dream. Ferdinand de Lesseps, French builder of the Suez Canal, made a strenuous effort to make the dream come true in the 1880's. The enormous task defeated him; work ceased before 1890.

The United States began preliminary survey work in 1904. Ten years later the first ship passed through. Between those dates, men conquered staggering obstacles. They cut through mountains, battled landslides, created an artificial lake about the size of Switzerland's Lac Léman (Lake Geneva), designed and built the complex lock system which the canal required. Equally epic was the winning battle against tropical diseases which took such a toll among de Lesseps' workers.

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PAUL ALMASY FROM THREE LIONS

TANANARIVE, MADAGASCAR'S CAPITAL CITY, HAS OUTGROWN THE NATIVE MEANING OF ITS NAME

Toward the end of the 19th century, before Madagascar (Bulletin No. 2) became a French colony, the town was made up of clusters of bamboo huts which clung to the slopes of a mountain. The native inhabitants called it Antananarivo, which, in their Malagasy language, means "town of the thousand villages." The practical French cut it to Tananarive. The bamboo huts have been replaced by red-roofed houses. These crowd up the slopes, shouldering their galleried façades one above another, toward the church which crowns the crest of the hill. No longer does the compact city resemble a casual collection of villages.

Bulletin No. 2, February 2, 1953

Madagascar, World's Fourth-Largest Island

THE waters surrounding Madagascar have yielded a surprise which has scientists buzzing. It is a weird fish of a species previously believed extinct for 50,000,000 years.

A native fisherman caught the five-foot-long coelacanth (pronounced SEE-la-kanth) off Madagascar's northwest coast where the Archipel des Comores (Comoro Archipelago) lies. The fisherman got a $280 reward and experts now hope other specimens will be found in the same waters.

Island's Wealth Largely Undeveloped

With a coastline of more than 3,000 miles, Madagascar has plenty of fishing grounds, but farming and cattle-raising support most of its people. A great store of mineral wealth, from gold to mica, has scarcely been tapped.

The island is big, fourth largest on the map. Its area of 228,642 square miles could blanket five Cubas with room to spare. It is only slightly smaller than Texas, which covers one-twelfth of the land in the United States. The 980-mile length of the island is close to the air distance between Washington, D. C., and New Orleans, Louisiana.

A French colony since 1896, Madagascar lies in the Indian Ocean off the southeast African coast. The Mozambique Channel separates it from the mainland. During World War II the island was considered so strategic that British and Free French forces seized it from the Vichy government to keep it from falling into Japanese hands. Diego-Suarez, at the northern tip, provides an important naval base.

Madagascar was discovered in 1500 by a Portuguese, Diogo Diaz. What he found was an island with a spine of mountains, volcanic craters, and clay plateaus. On the east, coastal regions enjoy ample rainfall and are more fertile than the side facing Africa; there dry seasons occur. The climate is mostly tropical.

Marco Polo's Misspelling Coined Its Name

When Diaz reported his find to his king, the monarch decided the island must be the "Madeigascar" mentioned in the *Voyages* of Marco Polo. Actually, Polo's misspelled reference was to Mogadishu (today's Somaliland), on the mainland, farther up the coast. In trying to render Arabic into his own language, Polo created a name which history has perpetuated with slight change.

Native rulers held sway until the last century when real colonization began. The island's population in 1950 was 4,350,700, of whom less than 70,000 were Europeans. Most numerous are the Malagasy tribes, a mixture of Malay, African, and Arabic stock. The total population approaches that of Massachusetts in the last census. Tananarive, the capital (illustration, inside cover), is situated in the mountains inland from the east coast. The Comoros and other islands come under the authority of Madagascar's governor general.

As part of the Marshall Plan, the United States began shipping equip-

Landslides, which reduced early traffic, presented the first problem. Four years of World War I also interfered. The job was not considered over until the Canal was formally declared open, July 12, 1920.

Booming business in the '20's and '30's made it necessary to build a second set of locks. Now there is discussion whether a third set may be needed. This is partly due to the lessons of World War II, during which the Big Ditch rendered yeoman service. Battleships and aircraft carriers became larger and larger. The *U.S.S. Missouri*—"Mighty Mo"—squeezed through the existing locks with little room to spare, but when 45,000-ton supercarriers appeared, they were too big to handle. Big liners, such as the *Queen Elizabeth,* likewise cannot use the Canal.

While Washington studies various programs for the future, residents of the Zone know their famous waterway will continue busy with a great procession of ships from all over the world. To watch them pass is a fascinating geography lesson in national flags. Even Switzerland is represented! Although this little nation is completely landlocked, it has its own merchantmen which operate from ports in other countries.

NOTE: The Panama Canal Zone is shown on the National Geographic Society's map of Countries of the Caribbean, on which it appears in a large-scale inset. Write the Society's headquarters, Washington 6, D. C. for a price list of maps.

For further information, see "Exploring Ancient Panama by Helicopter," in *The National Geographic Magazine* for February, 1950; "Exploring the Past in Panama," March, 1949; and "Panama, Bridge of the World," November, 1941. *(Back issues of the Magazine may be obtained by schools and libraries from the Society's headquarters at a special discounted price of 50¢ a copy, 1946–to date; 90¢, 1930–1945; $1.90, 1913–1929. Earlier issues at varied prices.)*

DRAWN BY HARRY S. OLIVER AND IRVIN E. ALLEMAN

HIGHWAY PARALLELING CANAL GIVES PANAMA A DOUBLE FAIRWAY FROM OCEAN TO OCEAN

Travelers can fly, drive, go by train, or "transit" the canal by ship from coast to coast in a few minutes, or a few hours. Shortly after Balboa sighted the Pacific "from a peak in Darién" (the eastern part of the isthmus), pack trains plodded for weeks through jungle to make the trip.

Bulletin No. 3, February 2, 1953

Explorer MacMillan Awarded Coveted Honor

THE National Geographic Society's Hubbard Gold Medal, one of geography's most coveted awards, has been presented to the famous Arctic explorer, Donald Baxter MacMillan, for long and outstanding service in the far north.

The specially designed medal given to Commander MacMillan is only the 15th to be presented since the first was struck in honor of Admiral Robert E. Peary in 1906.

The presentation was made by Dr. Gilbert Grosvenor, President of the National Geographic Society, on January 9 in Washington.

Medal Honors Memory of Society's First President

The three-and-a-half-inch medal was designed by the noted sculptor, Laura Gardin Fraser. The seal of the Society appears on one side, and on the other is an inscription to Commander MacMillan. This is surrounded by figures in relief representing the races of mankind, the continents, the heavens, and many animals.

The Hubbard Medal, given in memory of Gardiner Greene Hubbard, first President of the National Geographic Society, has special significance for Commander MacMillan as he aided Admiral Peary on the expedition that first reached the North Pole on April 6, 1909.

Others who have received the medal include Colonel Charles A. Lindbergh and his wife, Anne Morrow Lindbergh, and explorers Roald Amundsen, Robert A. Bartlett, Sir Ernest Shackleton, and Rear Admiral Richard E. Byrd. The American naval officer, then a lieutenant commander, shared with Commander MacMillan the honors and hardships of the 1925 MacMillan Arctic Expedition.

With Commander MacMillan responsible for the expedition as a whole, Byrd was in charge of the aircraft. His were the first successful overland airplane flights to be made in the Arctic. Admiral Byrd was present on the platform when Commander MacMillan was given the Hubbard Medal.

Friend to the Eskimos

In 1924, a year prior to the pioneering aviation expedition, Commander MacMillan placed a National Geographic Society bronze tablet on a huge boulder at Cape Sabine, Ellesmere Island, in honor of the men who died on the tragic Greely expedition to the Arctic in 1883-84.

Commander MacMillan, whose vigor and plans for further exploration belie his 78 years, has been sailing to the polar regions for 45 years. He has probably seen as much of the Arctic as any man alive. A personal friend of many of the Eskimos, he is one of the world's great authorities on those people of the far north.

Commander MacMillan's famous white schooner, the *Bowdoin*, has nosed into countless uncharted fjords along the coasts of Labrador and Greenland. It has been trapped in the dreaded Arctic ice pack, and snagged aground on unknown reefs. Charts of the Arctic owe much of their accuracy to surveys and soundings made from the *Bowdoin*.

ment to the French possession in 1949. This was a contribution to a 10-year plan to get Madagascar back on a prewar footing first, then to help it expand trade with other countries by developing the island's natural resources and industries.

Coffee, meat products, hides, tobacco, vanilla beans, and cloves are among the major exports. Vanilla beans have been a profitable product in trade with the United States. They are used in the manufacture of candy and perfume. Cloves, a spice used in cooking, also earn American dollars. These dried buds of a tropical tree resemble a nail, and get their name from the French word for nail, *clou.*

Madagascar has a system of compulsory education in primary schools for both European and native children, and both have opportunities for advanced education.

NOTE: Madagascar is shown on the Society's map of Africa.

For further information, see "Madagascar: Mystery Island," in *The National Geographic Magazine* for June, 1942; and "Across Madagascar by Boat, Auto, Railroad, and Filanzana," August, 1929.

PAUL ALMASY FROM THREE LIONS

ON MADAGASCAR'S DUSTY COUNTRY ROADS, AN OXCART CARAVAN MEETS LITTLE TRAFFIC

The slow pace of these plodding oxen is fast enough for the Malagasy tribesmen of the big Indian Ocean island. Their vocabulary does not include the word "hurry," and they prefer not to work any more than is necessary to earn money for their simple needs and their taxes.

Bulletin No. 4, February 2, 1953

French Trains Keep Today's Fastest Schedules

FRENCH trains streaking south from Paris toward the Riviera are now regarded as the fastest in the world, but the United States still holds the all-time record for the "sprint" on rails.

France's passenger streamliners to the Mediterranean coast are electric. From Paris to Dijon—195 miles—they average more than 77 miles per hour. On to Lyon, 124 miles past Dijon, the average drops only to 75, while the 679 miles from the French capital to Nice on the coast are covered at 66 miles an hour.

Burlington Beats French Train for Short Distance

The highest speed ever attained on rails was the 127.06 miles an hour reached in 1905 by the Pennsylvania Special, predecessor to the Pennsylvania Railroad's Broadway Limited (New York-Chicago). The steam-powered Special kept it up for three timed miles in Ohio. The Interstate Commerce Commission allows no such speeds today.

It does, however, authorize the Twin Cities Zephyrs of the Chicago, Burlington and Quincy—which are powered by diesel-electric locomotives —to average 86 miles an hour from East Dubuque, Illinois, to Prairie du Chien, Wisconsin. While this is the world's fastest rail schedule, it is maintained over a distance of only 54 miles, and the trains are lighter than the French champions.

Furthermore, the French expresses have proved they keep something in reserve. Starting late and delayed still more en route by a hotbox, the Paris-Lyon queen of the rails once made up lost time by averaging better than 90 miles an hour for almost 140 continuous miles. She wound up at her destination with an 83-mile-an-hour average, only three minutes behind the timetable.

When factors such as load, size of motive power, and layout of the line are taken into consideration, the closest American parallels to the French record holders are the three runs operated by the Union Pacific between Grand Island and North Platte, Nebraska. These crack trains average 78.5 miles per hour over 137 miles.

Italy Has Speedy Express from Milan to Bologna

A light three-car electric train covered the 195.8 miles between Florence and Milan, Italy, at 102 miles an hour to make the fastest stop-to-stop rail run ever recorded. Her top speed on the trip was 126.

The present all-electric Milan-Bologna express makes 72 miles an hour for 135 miles. By comparison, the Pennsylvania Railroad's electric Washington-New York Congressional beats 70 only on the stretch between North Philadelphia, Pennsylvania, and Newark, New Jersey, a distance of approximately 72 miles.

The first locomotive in the world to exceed 100 miles an hour was the New York Central's old 999. She hit 112 in 1893 and was for years the fastest thing on wheels.

In the early 1930's the British Cheltenham Flyer, traveling from

Although known to the people of the north as "Captain Mac," Macmillan earned his rank of Commander through service in both World Wars.

In the first conflict, he served with naval aviation. In the second, he was attached to the United States Hydrographic Office. There the service put to good use his intimate knowledge of the icy areas into which the global conflict forced an unprecedented number of fighting ships and aircraft.

NOTE: Regions explored by Commander MacMillan may be located on the Society's maps of The Top of the World and Canada, Alaska & Greenland.

For further information, see "Far North with 'Captain Mac'," in *The National Geographic Magazine* for October, 1951; "A Naturalist with MacMillan in the Arctic," March, 1926 (out of print; refer to your library); "MacMillan Arctic Expedition Returns," November, 1925; "Scientific Aspects of the MacMillan Arctic Expedition," September, 1925; and "*Bowdoin* in North Greenland" and "To Seek the Unknown in the Arctic," June, 1925.

RALPH B. HUBBARD, JR.

IN THE *BOWDOIN'S* CABIN, COMMANDER MACMILLAN AND HIS WIFE PLOT THE SHIP'S COURSE THROUGH ARCTIC SEAS. IT WAS HIS 29TH TRIP TO POLAR REGIONS, MRS. MACMILLAN'S 8TH

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Bulletin No. 5, February 2, 1953

Solfatara Is Harmless Neighbor of Vesuvius

EVER since the end of the 12th century, Italians—and visitors to Italy—have been teasing, with no fear of retaliation, a volcano less than 30 air miles from dangerous Vesuvius.

This harmless volcano is Solfatara, a small crater at Pozzuoli, just west of Naples. It has not erupted in more than seven and a half centuries. Its most recent explosion took place in 1198 A.D.

Lighted Match Could Increase Steam Cloud

Solfatara is safe because it is equipped with hundreds of tiny fissures, or fumaroles, which continuously give off gases and thus relieve the interior pressures of the mountain.

Tourist guides discovered years ago that a lighted match or even a cigarette brought close to the mouth of one of these fumaroles would provoke it into pouring forth a denser cloud of steam than usual. At the same time, the tiny light would excite other small openings near by. Travelers who have been mystified by the spectacular wonder can be assured that there is a scientific explanation. It is connected with the causes of condensation.

Volcanic fires are not far beneath the surface of the entire coastal region in the vicinity of Naples. Vesuvius (illustration, next page), which, with equal vigor, buried Pompeii in 79 A.D. and Allied air fields in 1944, taps this reservoir of hot gases and molten rock.

So, probably, does Solfatara; dormant Mount Nuovo near by, which witnesses said built itself to a height of 400 feet during three days in September, 1538; and the Phlegraean Fields area which contains the grotto of the Cumaean Sybil. This ancient soothsayer doubtless delivered her prophecies from behind a cloud of steam rising from a fumarole which has long since become dormant, if not actually extinct.

Fumaroles Could Render Vesuvius Harmless

But Vesuvius goes through its upheavals—which occur usually at least once every dozen years—without any noticeable effect on its neighbor. This probably means that there are no common chimneys from the fiery depths beneath both volcanoes.

According to volcanologists, a sufficient number of safety-valve fumaroles on Mount Vesuvius could make that mighty dealer of death as harmless as Solfatara. In the absence of fumaroles, tremendous pressures are corked up within and beneath the fiery volcano by matter that falls back and begins to build up obstructions in the chimney immediately after each eruption.

Vesuvius explodes with shattering power when the pressure becomes so great that the cork can no longer hold. When the pressure is relieved, eruptions cease and the volcano resumes a calm and placid appearance, shadowed by a slim plume of smoke. Between eruptions, men can descend to the floor of the crater.

While the amount of property and the vast number of lives that

Swindon to Paddington Station, London, was rated the record holder with a daily average of 71.4 and one test run at better than 81 miles per hour.

The so-called Main Line Express from Hobart to Launceston (135 miles), in Tasmania, Australia's island state, ranks with the world's slowest passenger trains. It averages 26.6 miles an hour, a tenth of a mile faster than the average the Soviet Union claims for its 5,800-mile run of the Trans-Siberian Railway from Moscow to Vladivostok.

But even in Tasmania and Siberia, railroading has come a long way from its beginnings. The Tom Thumb, first locomotive built in the United States, was beaten in a race with a horsecar in 1830.

Railroad trips are a popular pastime with a great many people. A favorite hobby is that of taking the first ride on a new line or the last on one which is going out of business. Short spur rail lines which have discontinued regular runs often make special week-end trips, taking winter-sports enthusiasts to ski or toboggan on snowy slopes, hikers to country byways (illustration, below), or fishermen to mountain trout streams.

NOTE: For additional information, see "Freedom Train Tours America," in *The National Geographic Magazine* for October, 1949; "Dixie Spins the Wheels of Industry," March, 1949; and "Trains of Today—and Tomorrow," November, 1936.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, November 11, 1951, "Non-Uniform Gauge Plagues Foreign Railroads."

ROBERT DUDLEY SMITH

A KEYSTONE LABELS THIS ELDERLY ENGINE A MEMBER OF THE PENNSYLVANIA SYSTEM

General lines reveal that it is old enough to be "put out to pasture" and used only on special occasions. In this instance it hauls a "wild-flower train," poking its cowcatcher into the underbrush along little used tracks while passengers debark to enjoy the countryside. Hauling ski trains, snow trains, hiker trains, and fishermen's specials is a pleasant occupation for a retired locomotive in its old age. Trains in regular service are sometimes detailed for these holiday jaunts when there is an unusual demand for transportation to sports resorts at week ends.

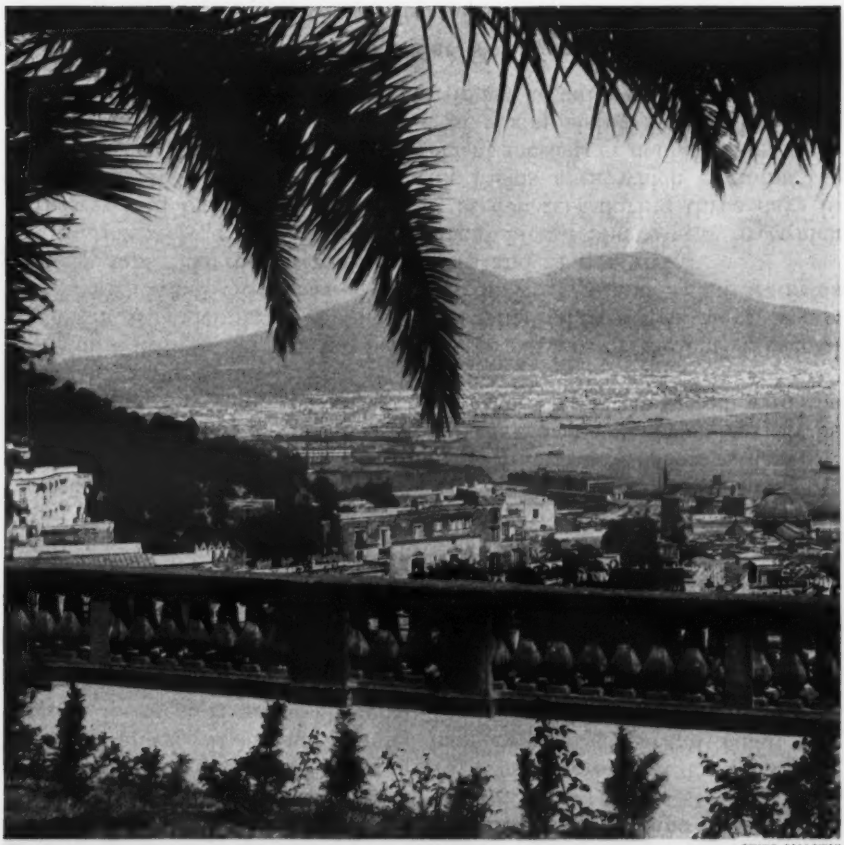
Vesuvius has destroyed are too great to be estimated, its outbursts have had some beneficial results. The lava and ashes showered up by the volcano contain potash which fertilizes the surrounding country, making it a rich agricultural region. And, by preserving Pompeii, Vesuvius gave posterity an actual view of ancient Roman civilization.

Moreover, the Italian volcano has furnished volcanologists with the knowledge which enables them to predict eruptions of other volcanoes, and to warn people living in the danger areas.

NOTE: Area of Italy's "safe" volcano and Vesuvius may be located on the Society's map of Europe and the Near East.

For additional information, see "Ancient Rome Brought to Life," in *The National Geographic Magazine* for November, 1946; "Behind the Lines in Italy," July, 1944; "Italy, From Roman Ruins to Radio," March, 1940; "Imperial Rome Reborn," March, 1937; and "Sojourning in the Italy of Today," September, 1936.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, December 11, 1950, "Pompeii Continues to Yield Secrets."



EWING GALLOWAY

VESUVIUS, QUEEN OF ITALY'S VOLCANOES, WAFTS FEATHERY PUFFS OF SMOKE FROM ITS CREST

The volcano adds action and excitement to the magnificent panorama of the Bay of Naples. It is the most active outlet of the volcanic fires which burn beneath the surface of Italy's central coastal region along the Tyrrhenian Sea. Volcanic action causes the height of Vesuvius to vary by as much as several hundred feet, but this majestic volcano averages 4,000 feet above sea level.